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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,196	01/24/2002	Y. Tom Tang	PF-0561 USN	3875

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Legal Department
Incyte Genomics Inc
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EXAMINER	
CHEN, STACY BROWN	
ART UNIT	**PAPER NUMBER**
1648	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/744,196	TANG ET AL.	
	Examiner	Art Unit	
	Stacy B Chen	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *1,2 and 12-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This application has been transferred to examiner Stacy Chen of Art Unit 1648. Applicant's election with traverse of Group II, claims 3-6 and 10-11, species SEQ ID No: 2, is acknowledged. Applicant's traversal is primarily based on the following substantive arguments:

- *Group II and Group III are drawn to claims defining the same essential feature. Applicant points out that the polynucleotides of Group III encode the polypeptides that are encoded by the polynucleotides of Group II.*
    - In response, Group III will be rejoined with Group II. SEQ ID NO: 7 will be examined as it correlates to SEQ ID NO: 2, the elected species.
- *The search of Groups II and I is not unduly burdensome. Applicant argues that the search for the polynucleotide that encodes the polypeptide represented by SEQ ID NO: 2, and the search for the polypeptide represented by SEQ ID NO: 2, is not unduly burdensome.*
    - In response, establishment of burden of search is not one of the criteria for establishing lack of unity.
- *The polypeptide of Group I and the polynucleotides of Group II and Group III exhibit corresponding special technical features.*
    - In response, the polypeptides of Group I and polynucleotides of Group II do not, in their broadest claimed embodiments, exhibit corresponding special technical features. Polypeptides, which are composed of amino acids, and polynucleotides, which are composed of purine and pyrimidine units, are structurally distinct molecules; any relationship between a polynucleotide and polypeptide is

dependent upon the information provided by the nucleic acid sequence open reading frame as it corresponds to the primary amino acid sequence of the encoded polypeptide. In the present claims, a polynucleotide of Group II does not necessarily encode a polypeptide of Group I. For example, the nucleic acid molecule of claim 5 is complementary to the coding sequence, and therefore would not encode the polypeptide of Group I. Furthermore, the information provided by the polynucleotide of Group II can be used to make a materially different polypeptide than that of group II. For example, a nucleic acid which hybridizes to a polynucleotide that encodes SEQ ID NO: 2, even under "stringent conditions", encompasses molecules which contain point mutations, splice sites, frameshift mutations or stop codons which would result in use of a different open reading frame, and thus encode a protein that lacks any significant structure in common with SEQ ID NO. 2. In addition, while a polypeptide of Group I can made by methods using some, but not all, of the polynucleotides that fall within the scope of Group II, it can also be recovered from a natural source using biochemical means. For instance, the polypeptide can be isolated using affinity chromatography.

Therefore, the restriction requirement is deemed proper and made FINAL. Claims 3-11 are pending and under examination with regard to SEQ ID NO: 2, and SEQ ID NO: 7.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim is drawn to a host cell comprising an expression vector. The host cell, unless designated "isolated", can be a host cell in any animal, including humans. Transgenic humans are not patentable subject matter. Suggested language is, "[A]n isolated host cell comprising the expression vector of claim 10."

3. Claims 3-11 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific, substantial and credible asserted utility, or a well established utility. The instant application has provided a description of an isolated DNA (SEQ ID NO: 7) encoding a protein and the protein (SEQ ID NO: 2) encoded thereby. The instant application does not disclose the biological role of this polynucleotide and encoded protein or its significance. The specification discloses that MACP-2 (molecules associated with cell proliferation, SEQ ID NO: 2) and the polynucleotides encoding the protein are useful in methods of detecting MACP-2 and polynucleotides encoding MACP-2. The specification also discloses that the protein encoded by the polynucleotide is useful for treating or preventing a cell proliferative disorder associated with decreased expression or activity of MACP. The specification also discloses that the polynucleotides are useful for diagnosing disorders associated with the expression of MACP. A list of disorders possibly associated with the expression of MACP is provided on pages 35-36. However, the specification only lists diseases associated with cell proliferation, but fails to indicate what disorders are actually associated with MACP-2. Not every cell proliferative disorder is linked to MACP-2 expression. The

specification fails to disclose how the MACP-2 is involved in cell proliferation, so that one would not know what to do with a MACP-2 polynucleotide and a cell proliferation associated diseases. Without further research, it would be a stab in the dark to diagnose or treat a cell proliferation disorder with MACP-2.

It is not unlikely that, after further characterization, the claimed polynucleotides or the proteins encoded thereby will be found to have a patentable utility. This further characterization, however, is part of the act of invention and until it has been undertaken, Applicant's claimed invention is incomplete. This is evidenced by Applicant's own specification, which discloses how to further characterize the MACP proteins and polynucleotides, and how to determine the associated disorders based on the presence of a relatively high amount of transcript in biopsied tissue from an individual (page 36). Applicant's disclosure is an invitation to further research and characterize MACP-2 and polynucleotides encoding MACP-2.

The instant situation is directly analogous to that which was addressed in *Brenner v. Manson, 148 U.S.P.Q. 689 (Sup. Ct,.1966)* in which a novel compound that was structurally analogous to other compounds which were known to possess anti-cancer activity was alleged to be useful because the compound produced thereby was potentially useful as an anti-tumor agent in the absence of evidence supporting this utility. The court expressed the opinion that all chemical compounds are "useful" to the chemical arts when this term is given its broadest interpretation. However, the court held that this broad interpretation was not the intended definition of "useful" as it appears in 35 U.S.C. § 101, which requires that an invention must have either an immediately obvious or fully disclosed "real world" utility. The Court held that:

"The basic *quid pro quo* contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived from the public from an invention with substantial

utility", "[u]nless and until a process is refined and developed to this point- where specific benefit exists in currently available form- there is insufficient justification for permitting an applicant to engross what may prove to be a broad field", and

"a patent is not a hunting license", "[i]t is not a reward for the search, but compensation for its successful conclusion."

The instant claims are drawn to polynucleotides that encode a protein of as yet undetermined function or biological significance. Until some actual and specific significance can be attributed to the protein identified in the specification as MACP-2, of nucleic acids encoding such or fragments thereof, the instant invention is incomplete. In the absence of any functional or biological significance of this protein, there is no immediately obvious "patentable" use for it. To employ a nucleic acid of the instant invention (or the protein encoded thereby) in the diagnosis, treatment or prevention of cell proliferative disorders would clearly require the use of such as an object of further research, as no such disorders have yet to be identified, and thus would require substantial further investigation, which investigation would constitute part of the inventive process itself. Since the instant specification does not disclose a readily available, "real world" use for the claimed polynucleotide of the protein encoded thereby, the claimed invention is incomplete and does not meet the requirement of 35 U.S.C. § 101 as being useful. Because the claimed invention is not supported by a specific and substantial asserted utility, credibility will not be assessed.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3-11 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific, substantial and credible asserted utility, or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

5. Claims 4 and 8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The instant specification sets forth a polynucleotide of SEQ ID NO: 7, encoding a polypeptide of SEQ ID NO: 2. However, the written description is not commensurate with an "an isolated and purified variant having at least 90% polynucleotide sequence identity to the polynucleotide of claim 3 (encodes SEQ ID No: 2)", or "an isolated and purified polynucleotide variant having at least 90% polynucleotide sequence identity to the polynucleotide of claim 7 (SEQ ID NO: 7)". To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, and any combination thereof. In this case, the only factor present in the claim that is sufficiently disclosed is a partial structure in the form of a recitation of percent identity. The specification does not identify any particular portion of the structure that must be conserved, nor does it provide a disclosure of structure/function

correlation. The distinguishing characteristics of the claimed genus are not described. The only adequately described species is a polypeptide comprising SEQ ID NO: 2, and a polynucleotide comprising SEQ ID NO: 7. No active variants are disclosed. Accordingly, the specification does not provide adequate written description of the claimed genus.

The specification provides general principles for making the polynucleotide variants of the claimed sequences encoding the MACP-2 polypeptides. However, the disclosure fails to provide a detailed description directed to the intended variants of the polypeptide of SEQ ID NO: 2, or the polynucleotide of SEQ ID NO: 7, including critical features of such that should be conserved. It is not sufficient to name the claimed variant nucleic acids that can encode for polypeptides comprising 90% identity to SEQ ID NO: 2, or the variant polypeptides without disclosure of what features define the claimed genus. The disclosure fails to describe the common attributes or characteristics that identify the members of the genus. The claimed genus is highly variant, and the disclosure of a specific polypeptide/polynucleotide sequence is insufficient to describe the genus consisting of variants of SEQ ID NO: 2 and 7. One of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species or a description of the structural/functional features sufficient to describe the genus as broadly claimed.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at

page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of polypeptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016. One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only isolated polynucleotides comprising the sequence set forth in SEQ ID NO: 7, or encoding the protein of SEQ ID NO: 2, but not the full breadth of the claim meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 5 is drawn to an isolated polynucleotide that hybridizes under stringent condition to another polynucleotide. The use of the term "stringent conditions" is unclear

because it is a relative term, subject to individual interpretation. The specification discloses that "stringent conditions" refers to conditions which permit hybridization between polynucleotides and the claimed polynucleotides (page 13). However, the exact conditions are not disclosed which qualify the conditions as stringent.

Conclusion

7. No claim is allowed. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy B. Chen whose telephone number is 571-272-0896. The examiner can normally be reached on M-F (7:00-4:30). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James C. Housel can be reached on 571-272-0902. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

SBC

Stacy B. Chen
September 29, 2004

James C. Housel 10/1/04
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